

Amendment To The Claims:

Below is a listing of claims that will replace all prior versions and listings of claims in the present patent application.

1. (Currently Amended) A method for detecting metal extrusion associated with electromigration (EM) under high current density situations within an EM test line, the method comprising the steps of:

situating one end of an electrically conductive lead close to a single anticipated location of metal extrusion associated with electromigration on the EM test line, such that the end of the electrically conductive lead in combination with the single anticipated location of metal extrusion together comprise two charge storing surfaces of a single capacitor having an electrical capacitance;

situating one or more additional ends of one or more additional electrically conductive leads close to the single anticipated location of metal extrusion associated with electromigration on the EM test line, such that the end of each additional electrically conductive leads in combination with the single anticipated location of metal extrusion comprise charge storing surfaces of one or more additional capacitors each having an electrical capacitance;

connecting the single capacitor and the one or more additional capacitors in parallel;

measuring the capacitance of the single capacitor and the capacitances of the one or more additional capacitors prior to operation of the EM test line;

making subsequent measurements of the capacitance of the single capacitor and the capacitances of the one or more additional capacitors during or after operation of the EM test line; and

detecting changes in the capacitance of the single capacitor and the capacitances of the one or more additional capacitors to detect metal extrusion associated with electromigration.

~~measuring the capacitance of the single capacitor prior to operation of the EM test line;~~

~~making subsequent measurements of the capacitance of the single capacitor during or after operation of the EM test line; and~~

~~detecting changes in the capacitance of the said single capacitor to detect metal extrusion associated with electromigration.~~

2. (Canceled)

3. (Canceled)

4. (Currently Amended) The method of Claim 1 further including the steps of:

situating the one or more additional ends of each of the one or more additional electrically conductive leads close to one or more additional possible locations of metal extrusion associated with electromigration on the EM test line, such that each end of each electrically conductive lead in combination with each additional possible location of metal extrusion together comprise charge storing surfaces of one or more additional capacitors each having an electrical capacitance;

connecting the single capacitor and the one or more additional capacitors in parallel;

measuring the capacitance of the single capacitor and the capacitances of each of the one or more additional capacitors prior to operation of the EM test line;

making subsequent measurements of the capacitance of the single capacitor and the capacitances of the one or more additional capacitors during or after operation of the EM test line; and

detecting changes in the capacitance of the single capacitor and the capacitances of the one or more additional capacitors to detect metal extrusion associated with electromigration.

5. (Currently Amended) The method of Claim 4 further including the step of forming a module from the connecting of the single capacitor and the one or more additional capacitors in parallel ~~to comprise a module~~.

6. (Currently Amended) A method for detecting metal extrusion associated with electromigration (EM) under high current density situations within two or more EM test lines within a circuit, the method being characterized by the steps of:

situating the ends of one or more electrically conductive leads close to one or more anticipated locations of metal extrusion associated with electromigration on one of the two or more EM test lines, such that each end of each electrically conductive lead in combination with each of the one or more anticipated locations of metal extrusion on each of the two or more EM test lines together comprise two charge storing surfaces of one or more capacitors each having an electrical capacitance;

connecting the one or more capacitors comprised of ends of one or more electrically conductive leads close to the one or more single anticipated locations of metal extrusion on each of the two or more EM test lines in parallel to create a capacitive extrusion monitor module for each EM test line;

measuring the capacitance of each module on each of the two or more EM test lines prior to operation;

making subsequent measurements of the capacitance of each module during or after operation of the EM test line; and

detecting changes in the capacitance of each module to detect metal extrusion associated with electromigration.

~~measuring the capacitance of each of the one or more capacitors prior to operation of the EM test lines;~~

~~making subsequent measurements of the capacitance of each of the one or more capacitors during or after operation of the EM test lines; and~~

~~detecting changes in the capacitance of each of the one or more capacitors to detect metal extrusion associated with electromigration.~~

7. (Canceled)

8. (Currently Amended) The method of Claim 6 ~~[[7]]~~ further including the steps of: ~~[[;]]~~

connecting in parallel two or more of each of the capacitive extrusion monitor modules of each of the two or more EM test lines within the circuit to create one or more capacitive extrusion monitor meta-modules;

measuring the capacitance of each meta-module prior to operation;

making subsequent measurements of the capacitance of each meta-module during or after operation; and

detecting changes in the capacitance of each meta-module to detect metal extrusion associated with electromigration.

9. (Currently Amended) The method of Claim 8 further including the steps of:

connecting in parallel two or more of each of the capacitive extrusion monitor meta-modules; and

equipping all of the two or more capacitive extrusion monitor meta-modules with a decoder to determine the meta-module ~~meta-module~~ in which metal extrusion has occurred.

10. (Original) The method of Claim 9 further including the step of incorporating in close proximity with each of the two or more EM test lines within the circuit one or more leakage current type extrusion monitors.

11. (Currently Amended) An apparatus for monitoring and detecting metal extrusion associated with electromigration (EM) under high current density situations within EM test lines within a test circuit, the apparatus comprising: capacitive means for detecting metal extrusion, wherein the capacitive means comprises ends from more than one electrically conductive leads each disposed in close proximity to at least one anticipated site of metal extrusion on each of at least two EM test lines such that the combination of each anticipated site on each of the at least two EM test lines and the ends of the electrically conductive leads in close proximity thereto comprise charge storing surfaces of one or more of the capacitors each having a capacitance that changes when a metal extrusion at the at least one of the anticipated sites on the at least two EM test lines influences the geometry and the capacitance of the one or more of the capacitors, wherein the capacitors comprised of charge storing surfaces of the ends of each of the more than one electrically conductive leads disposed in close proximity to one or more of each of at least one anticipated site on each of the at least two EM test lines are connected in parallel to create one or more modules of parallel connected capacitors for each of the at least two EM test lines.

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Currently Amended) The apparatus of Claim 11 [[17]] wherein each of the one or more modules of parallel connected capacitors for each of the at least two EM test lines are parallel connected to create at least one or more meta-modules of parallel connected modules for each set of one or more EM test lines.

19. (Original) The apparatus of Claim 18 wherein two or more of each of the capacitive extrusion monitor meta-modules are connected in parallel and equipped with a decoder to determine the meta-module in which metal extrusion has occurred.

20. (Original) The apparatus of Claim 19 wherein one or more of the EM test lines is further monitored for metal extrusion by the use of one or more standard leakage current type extrusion monitors.